

## CLAIMS:

1. A device for forming an image which is composed of a plurality of sub-areas ( $T_1$  to  $T_N$ ), which device includes
- a detector which includes a plurality of sensor elements for generating image data,
  - 5 - read-out units ( $V_1$  to  $V_N$ ) which are associated with the sub-areas ( $T_1$  to  $T_N$ ) of the image,
  - an analysis unit (12) which is arranged to evaluate image data from adjoining image areas ( $S_{63}$  and  $S_{66}$ ) of neighboring sub-areas ( $T_1$  and  $T_2$ ) and to generate correction data, and
  - 10 - a correction unit (13) which is arranged to correct incorrect image data by means of correction data.
2. A device as claimed in claim 1,
- 15 characterized in that the detector includes a plurality of sensor elements which are arranged in rows and columns forming a matrix.
3. A device as claimed in claim 1,
- 20 characterized in that rows or columns, or parts thereof, constitute an image area, that a plurality of image areas constitute a sub-area, and that amplifiers are arranged so as to read out sub-areas.
4. A device as claimed in claim 1,
- characterized in that
- there is provided a memory (14) for storing the correction data.
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5. A device as claimed in claim 1,
- characterized in that the image data is applied to the analysis unit (12) at a reduced rate.
6. A device as claimed in claim 1,

characterized in that the analysis unit (12) is arranged to receive image data from adjoining columns of neighboring amplifiers, and includes a histogram generator (15) for generating histograms of the image data received, and a summing unit (16) for forming cumulative histograms from the histograms, and  
 5 an adaptation unit (17) for forming a functional dependency between the amplification characteristics of the amplifiers of neighboring columns and for generating correction data.

7. A device as claimed in claim 6, characterized in that the histogram generator (15) is arranged to receive the image data and to  
 10 generate histograms over a selectable period of time.

8. A device as claimed in claim 1 characterized in that the analysis unit (12) includes  
 15 means (20) for forming an estimated value ( $SW_{65}$ ) for the image value ( $GW_{65}$ ) of a pixel ( $P_{65}$ ) of a sub-area ( $T_2$ ) to be corrected, the pixel ( $P_{65}$ ) being situated at a boundary (G) with a neighboring sub-area ( $T_1$ ), while utilizing an image value ( $GW_{64}$ ) of the adjoining image area ( $S_{64}$ ) of the neighboring sub-area ( $T_1$ ), and  
 20 means (21, 22) for forming a correction value for the relevant image value ( $GW_{65}$ ) in the sub-area ( $T_2$ ) to be corrected by comparison of the actual image value  $SW_{65}$  of the pixel ( $P_{65}$ ) with the estimated value ( $SW_{65}$ ).

9. A device as claimed in claim 8, characterized in that  
 25 the analysis unit includes means (20) for extrapolating across the boundary (G) the image values ( $GW_{63}$ ,  $GW_{64}$ ) of pixels ( $P_{63}$ ,  $P_{64}$ ) of an image area ( $S_{63}$ ,  $S_{64}$ ) of the neighboring sub-area ( $T_1$ ), adjoining the pixel ( $P_{65}$ ) of the sub-area ( $T_2$ ) to be corrected.

10. A method of forming an image which is composed of a plurality of sub-areas  
 30 ( $T_1$  to  $T_N$ ) wherein a read-out unit ( $V_1$  to  $V_N$ ) is associated with each sub-area, characterized in that image data from adjoining image areas ( $S_{63}$  and  $S_{66}$ ) of neighboring sub-areas ( $T_1$  and  $T_2$ ) is evaluated in order to mitigate differences between amplifier characteristics.

11. A method as claimed in claim 10,  
characterized in that  
an estimated value ( $SW_{65}$ ) is determined for an image value ( $GW_{65}$ ) of a pixel ( $P_{65}$ ) of a sub-  
area ( $T_2$ ) to be corrected, the pixel ( $P_{65}$ ) being situated at a boundary ( $G$ ) with a neighboring  
5 sub-area ( $T_1$ ), while utilizing the image value ( $GW_{64}$ ) of a pixel ( $P_{64}$ ) of the adjoining image  
area ( $S_{64}$ ) of the neighboring sub-area ( $T_1$ ), a correction value for the relevant image value  
( $GW_{65}$ ) in the sub-area ( $T_2$ ) to be corrected being determined by comparison of the actual  
image value ( $GW_{65}$ ) of the pixel ( $P_{65}$ ) and the estimated value ( $SW_{65}$ ).
12. A method as claimed in claim 10,  
characterized in that  
a directly adjacent pixel of the neighboring sub-area is used as the estimated value of the  
image value.
13. A method as claimed in claim 10,  
characterized in that  
the image values ( $GW_{63}$ ,  $GW_{64}$ ) of pixels ( $P_{63}$ ,  $P_{64}$ ) of the adjoining image area ( $S_{63}$ ,  $S_{64}$ ) of  
the neighboring sub-area ( $T_1$ ) are extrapolated across the boundary ( $G$ ) in order to determine  
the estimated value ( $SW_{65}$ ).
14. A method as claimed in claim 10,  
characterized in that  
a first correction value is formed for the image value ( $GW_{65}$ ) of a pixel ( $P_{65}$ ) of the sub-area  
( $T_2$ ) to be corrected and an estimated value ( $SW_{64}$ ) for the neighboring pixel ( $P_{65}$ ) is  
25 determined for a neighboring pixel ( $GW_{64}$ ) of the neighboring sub-area ( $T_1$ ), directly  
adjoining this pixel ( $P_{65}$ ) of the sub-area ( $T_2$ ) to be corrected, while utilizing image values  
( $GW_{65}$ ,  $GW_{66}$ ) of the sub-area ( $T_2$ ) to be corrected, a second correction value being formed  
by comparison of the estimated value ( $GW_{64}$ ) and the actual image value ( $GW_{64}$ ) of the  
neighboring pixel ( $P_{64}$ ), a common correction value for the relevant image value ( $GW_{65}$ ) of  
30 the sub-area ( $T_2$ ) to be corrected being formed from the first and the second correction value.
15. A method as claimed in one of the claims 10 to 14,  
characterized in that

a common correction value for the relevant image value in the sub-area to be corrected is formed from the correction values for the same image values of different pixels of the sub-area to be corrected.

- 5 16. A method as claimed in one of the claims 10 to 15,  
characterized in that  
the correction values for the image values of the individual sub-areas ( $T_1$  to  $T_N$ ) are stored in  
an adaptation table (LUT) and are fetched from this table (LUT) for correction.
- 10 17. An X-ray examination apparatus which includes  
an X-ray source for emitting X-rays and for forming an X-ray image,  
an X-ray detector for forming an optical image from the X-ray image, which detector  
includes sensor elements arranged in rows and columns and at least two amplifiers ( $V_1$  to  $V_N$ )  
for reading out detected image data, at least one amplifier being associated with each sub-  
15 area ( $T_1$  to  $T_N$ ) in order to read out detected image data,  
characterized in that the apparatus includes  
an analysis unit (12) for forming correction data on the basis of the evaluation of image data  
from adjoining image areas ( $S_{64}$  and  $S_{65}$ ) of neighboring sub-areas ( $T_1$  and  $T_2$ ), and  
a correction unit (13) for correcting the incorrect image data by means of the correction data.
- 20 18. A computer program for the correction of image data of an image which is  
composed of a plurality of sub-areas ( $T_1$  to  $T_N$ ), wherein a respective read-out unit ( $V_1$  to  $V_N$ )  
is associated with sub-areas ( $T_1$  to  $T_N$ ) of the image and image data from image areas ( $S_{64}$  and  
 $S_{65}$ ) of adjoining sub-areas ( $T_1$  and  $T_2$ ) of neighboring read-out units ( $V_1$  and  $V_2$ ) is evaluated  
25 by formation of histograms in order to generate correction data after integration of the  
histograms, which correction data is used to adapt the image data from one sub-area ( $T_2$ ) to  
the amplifier characteristic of the read-out unit ( $V_1$ ) which amplifies the adjoining sub-area  
( $T_1$ ).

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